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## NOTES ON THE BIRDS OF MANITOBA.

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DURING the last two years I have several times had occasion to visit that newly-opened but much-talked-of region known as Manitoba; and as on each visit I devoted as much time as I was able to spare from other branches of Natural History to the study of the Ornithology of that country,—a subject to which very little attention has hitherto been directed,—I now propose to offer a few remarks upon it. It must, however, be clearly understood that my observations are put forward strictly as *notes*. Many, even of the commonest birds, are not so much as referred to herein, simply because they did not happen to come specially under my notice. Most of the following notes were made near the town of Carberry, 105 miles west of Winnipeg, during the months of August, September, and October, 1883. I cannot too fully acknowledge the assistance given by my friend Mr. E. E. T. Seton, of Toronto, who for several years past has resided in Manitoba, and has done much towards investigating its avifauna. The nomenclature used is that employed in the new edition of Dr. Coues' 'Key to North American Birds.'

The popular idea of Manitoba as an icy and inhospitable country is not altogether wrong, so far as the winter is concerned; but of the summer season it is wholly incorrect. While the latter lasts, bird-life in the greatest variety everywhere abounds. Meadow Larks, "Quailies," Prairie Chickens, Bay-wings, and a hundred other kinds breed on the open prairies;

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Hawks, King-birds, and Nightjars swarm in the "bluffs" and woods; wild-fowl in the "sleughs."\* Early spring and late autumn see a vast army of migrants on the move; whilst, even in winter, Hawk Owls, Snowy Owls, Shore Larks, Snow Buntings, Crossbills, Pine Grosbeaks, several Woodpeckers, "Chickadees," Grouse, Shrikes, &c., enliven the somewhat dreary scene.

It will be well to say something of the haunts of the birds spoken of in the following paragraphs. Carberry stands at the south end of what is known as the "Big Plain," which is merely a rather unusually large stretch of unbroken prairie. South of the town, and extending almost to the Assiniboine River, lies an extensive range of desolate sand-hills, which are seldom invaded by the foot of man, and are likely long to remain in their primitive condition; they consist merely of wind-formed dunes, with hollows between which are filled with water, and form the home of many a rare bird and mammal. The sand of which the hills are formed is so pure that it can only support a very scanty covering of grass; and it is to this circumstance that we are indebted for the fact that the sand-hills, unlike the prairies, support a fairly abundant growth of trees, such as spruce, poplar, and oak. Were the grass sufficiently long and dense to "carry fire," the trees would be quickly killed and burned to logs. Mr. Seton has just succeeded, after a long and exciting hunt, in killing a Moose in one of the woods on the sand-hills. Through the centre of the range of sand-hills runs Pine Creek, a sluggish stream clogged with water-lilies, and fringed with willows and bulrushes. For several miles on either side of the creek extends a huge swamp, covered thickly with trees of spruce and tamarac, where the Indian pitcher-plant, *Sarracenia purpurea*, grows by the acre, and all things combine to make a true naturalists' paradise. In winter, when everything is frozen hard, this swamp may be crossed with ease; but so wet and impenetrable is it in summer, that I have little hesitation in claiming that no one except Mr. Seton and myself have ever crossed it at that time of year. Of the prairies not much need be said; they are flat, covered with a fine growth of grass, and interspersed with bluffs, which are gradually disappearing before

\* On the Manitoban prairies any isolated cluster of trees or a copse is known as a "bluff"; a "sleugh" is the invariable name for a wet, marshy spot or a shallow pond.

the hungry fire. If prairie-fires had been by some means arrested fifty years since, Manitoba would to-day have been a densely-wooded, instead of a prairie, country. The fire, too, annually destroys the young trees that spring up. In the moister parts, where lakes and ponds arrest the progress of the fires, extensive woods of poplar are found, in which many woodland birds are able to find a home, even though Manitoba is essentially a prairie country. Of the excessive fertility of the prairie soil there is no question.

The American Robin, *Turdus migratorius*, is a common bird among the trees on the sand-hills and in the bluffs, where it also breeds.

An almost equally common species in similar situations, and in the willow-clumps on the prairies, is the Cat-bird, *Mimus carolinensis*. It is a bird not easily overlooked, for on entering any dense copse one is almost certain to have several peering through the foliage and incessantly uttering their loud, harsh, and extremely cat-like mew, especially if the nest be near at hand. It approaches very close, and is easy to shoot. I found it breeding in a fringe of willows beside the creek which intersects the dry, treeless prairie round Moose Jaw, 398 miles west of Winnipeg.

The Long-tailed Chickadee, *Parus atricapillus septentrionalis*, is the only Tit I remember observing, and I believe it does not breed in Manitoba. I shot the first specimen on September 14th; two days later a pair entered a room in which I was sitting, and I captured them. The "chickadee-dee-dee" of this species is unmistakable.

*Sitta carolinensis* was not an abundant species, but I brought home one specimen.

On one occasion I was told that a Wren, *Troglodytes ædon*, had built its nest in the pocket of a coat hung on the door of a ferryman's house on the Souris River.

The Shore Lark, *Eremophila alpestris*, is a common species, breeding on the prairie throughout Manitoba, probably raising more than one brood in the course of the year.

The eggs and nest of the Connecticut Warbler, *Opornis agilis*, taken by Mr. Seton in the extensive tamarac swamp south of Carberry, are now in the Smithsonian Institution. They are, I believe, the first that have been taken.

The Swallow-tribe seems to be usually scarce in Manitoba; but farther west, as far as the Saskatchewan, one species is abundant, and breeds round all the water-tanks and under many of the bridges along the railway. As three years ago this region, through which the line now runs, was practically uninhabited, and the Swallows consequently could hardly have then found suitable nesting-places, it seems probable that the range of the species has been considerably extended in that time—an instance, doubtless, of the rapidity with which some species follow man as he extends the area of civilisation.

At least one species of Shrike is common and breeds, building its nest largely of the stalks of a species of *Gnaphalium* in the branches of the low, scrubby oaks that cover the sand-hills.

The Goldfinch, *Astragalinus tristis*, is fairly common on the edges of the bluffs.

The little Baywing, *Poœcetes gramineus*, is one of the most familiar of prairie birds, and nightly sings a subdued kind of vesper-song as the sun goes down. Its most notable peculiarity, however, is its habit of flitting along a trail or pathway in front of an advancing waggon or person, alighting every few yards. As it is but comparatively recently that there have been any human trails over the prairies, it seems probable that this proceeding is a relic of a habit acquired by the bird of flitting before the buffaloes along the paths made by those animals.

About the second week in September the Snowbirds or Juncos, *Junco hyemalis*, began to become abundant, and remained so for at least a month.

The Bobolink, *Dolichonyx oryzivorus*, is of course common. I saw birds in both the black and buff plumage together near Carberry on August 30th.

The Red-winged Blackbird, *Agelæus phœniceus*, is very abundant, and breeds in the rushes round most of the lakes, afterwards collecting into flocks.

The gorgeous Baltimore Oriole, *Icterus galbula*, is far from rare, and its hanging nest is often to be found in the poplar trees growing on the sand-hills.

No bird is more characteristic of the prairies than the Meadow Lark, *Sturnella neglecta*. It is very common in summer, and breeds abundantly. Its clear, musical whistle (almost, if not

quite, equal to the song of the Nightingale) is uttered by the bird either when upon the wing, the ground, or a tree, and may be heard for a great distance. Towards the end of August, though the birds had not left, they had largely ceased whistling; but the arrival of a few warm days, about the 10th of September, set them off again for a time. When I left, about the middle of October, there were still a few small family-parties about, though the great majority had gone south. In the previous year (1882) Mr. Seton says the main body left about the 17th of October. It is decidedly a shy bird, even in a country where most birds are notably less wary than in England; and, common as the bird is, it is no easy matter to obtain a specimen just when one wants. As Mr. Seton remarked to me, it bears truly heraldic markings on its breast—or, *a chevron sable*. Late in July I shot a young specimen with a large festering sore upon its breast, doubtless caused by its having accidentally flown against a spike on one of the numerous “barb-wire” fences on which this bird frequently perches. Not long after, I shot a Purple Grackle with an old wound on its head, which was probably occasioned by the same means. I have often thought what a capital thing it would be to introduce the Meadow Lark into England. So far as plumage and song are concerned, it would take rank among our brightest-coloured and most admired songsters; while its hardy nature would allow of its remaining with us the whole year round, as indeed it often does in Ontario and other districts farther south than Manitoba. Perfectly harmless and accustomed to grassy countries, it would quickly become naturalised in our meadows, where it would find an abundance of insect-food, and would doubtless soon increase sufficiently in numbers to serve, if need be, as a game- and food-bird, as it largely does in the United States. No other songster that I ever heard equals this bird in the sweetness and mellowness of its notes.

Two specimens of Grackle, the Purple, *Quiscalus purpureus*, and the Rusty, *Scolecophagus ferrugineus*, are excessively abundant, and often collect into enormous flocks after the breeding-season. Under the name of “Blackbirds” they share in common the curses of the settlers, on account of the great damage they do in the harvest-field. They are both very noisy birds.

I did not meet with Brewer's Blackbird, *Scolecophagus cyanocephalus*, in Manitoba, but shot a specimen—probably a young

male—at Maple Creek, 597 miles west of Winnipeg, on July 10th, 1884.

Before the beginning of September the Crow, *Corvus frugivorus*, did not seem to be particularly common; but after that it became more noticeable. Large flocks frequently flew over, their loud hoarse croak being audible for long distances over the prairie. On September 7th a specimen was brought in having a curious malformation of the bill, which was evidently due to a gun-shot, as the right humerus had also been broken. The upper mandible was bent a good deal to the left, as well as having the tip strongly turned downwards. A notch had been worn in the side of the lower mandible where the upper one crossed it, but the former was normal in all other respects. As the bird was only wounded slightly in the wing, we kept him alive in order to learn how, with such an awkward instrument for a bill, he contrived to take his meals; for the fine condition he was in clearly showed that he had some means of so doing; and in a few hours he was tame enough to show us how. We placed some pieces of bread upon the floor, which, being hard and flat, probably puzzled the bird more than if it had been soft or uneven; but, by standing directly over them and putting down his head till it was almost between his legs and the crown nearly on the floor, he contrived to get the piece of bread between his mandibles.

The Whiskey Jack, *Perisoreus canadensis*, probably breeds in the dense tamarac swamp south of Carberry, as a young specimen was shot there by Mr. Seton in August.

The Blue Jay, *Cyanocitta cristata*, is common, but appears to be migratory,—partially at least,—leaving in winter, though resident farther south.

The well-known King-bird or Tyrant Flycatcher, *Tyrannus carolinensis*, is abundant in Manitoba. A more fearless, inquisitive, pugnacious, and warlike bird it is difficult to imagine. Often when I have shot a bird as a specimen, up has flown a King-bird with a manner which gave him the appearance of saying—"Now, what's going on here"? To see a King-bird dash at and attack a huge Harrier, for no other purpose whatsoever than to have a fight, is a thing of common occurrence, and the Harrier always tries to avoid and escape from his assailant. The King-bird breeds in the low scrubby oak trees

which cover the sand-hills, building, like the Shrike, a nest consisting largely of the stalks of a species of *Gnaphalium*. After the young are able to fly they often live round the settlers' houses on the open prairie, but about the end of August they all leave.

Among the trees on the sand-hills and in the bluffs the Night Hawk, *Chordeiles popetue*, is abundant, and makes itself very conspicuous towards evening by its loud scream, by booming, and by displaying during flight the unmistakable white patch on each wing. Not unfrequently it may be seen on the wing at mid-day; and it always makes an appearance long before sunset, sailing about at a great height and screaming frequently. After flying awhile over the head of any intruder, it suddenly spreads its wings and, giving a wide swoop downwards, emits a loud booming noise, which has gained for it in some parts of America the name of "Bull Bat." That this noise is made over one's head in order to threaten or intimidate seems to me pretty certain, but I have also, I believe, heard it emitted at a distance, without any such object. It breeds commonly among the trees on the sand-hills. One day early in August we found a nest, or rather two young ones—for nest there was none—about three days old, with the egg-shells lying near. Though so young, one of the nestlings, which we afterwards proved by dissection to be a male, was very pugnacious, and snapped his bill menacingly when touched; the other was perfectly quiet, so we concluded, though we could not prove it, that it belonged to "the gentler sex." While we were at the nest the old birds were, as usual, very solicitous for the safety of their young, settling on trees, fallen logs, the ground, and fluttering round to draw off our attention. The number of old birds began to get very much less by the end of August, but a few were nevertheless seen until well on into September—one as late as the 11th. After the migration commenced they were not unfrequently seen in the evenings flying over in large straggling parties, circling about as they proceeded. These parties usually travelled south-west I believe, though this is not the direction usually chosen by the other birds of the district when moving south.

The Whip-poor-Will, *Antrostomus vociferus*, differs from its near relative, the Night Hawk, in several particulars. It seldom leaves the woods and comes out onto the open prairie; and,

even among the trees, it is seldom or never seen sailing about high overhead during daylight. It is also a much shyer bird; and, although its highly remarkable far-sounding voice may often be heard, it needs great caution to get within a sufficiently short distance to see the performer. About the end of August all the Whip-poor-Wills seemed to have departed, and I was therefore considerably surprised to hear the unmistakable voice of one in the woods near Carberry on the evening of September 11th. This bird also is very solicitous for its young. Going one evening into the woods to fetch home an easel Mr. Seton had left when sketching, we were almost mobbed by a pair, which kept on for some time, tumbling about among the bushes and settling on the charred logs of trees felled by the fire. We must have been very close to the nest; but it was too dark to find it, though we felt the ground all round.

Several species of Woodpecker are common in Manitoba, notably the Golden-winged, *Colaptes auratus*, which breeds frequently in holes in the trunks of poplar trees in the bluffs.

The Red-headed Woodpecker, *Melanerpes erythrocephalus*, also breeds, but is much less common.

The Short-eared Owl, *Asio accipitrinus*, seemed to be decidedly uncommon. On the evening of August 20th, 1883, just as it was getting dusk, I fired at one sailing overhead. I thought I had missed him, but it was just light enough for us to think we saw him alight in an open spot in a neighbouring field, so we decided to go and look on the morrow; however, the following day was so windy and wet that we did not go till the afternoon of the day after, when we were surprised to see the bird rise, apparently unhurt. It fell to Mr. Seton's gun, and after a careful examination we could not find that it had received any previous injury, except a slight graze on one wing; yet it had been foolish enough to sit moping in one spot for over forty hours with nothing to eat except one large dragon-fly and a great brown cricket, as we afterwards found by dissection.

The Marsh Harrier, *Circus cyaneus hudsonius*, is a very common bird throughout Manitoba, and may often be seen sailing over the prairies, the sleughs, or the wheat-fields. One morning late in August I remember counting a dozen round one house. It must breed there, but Mr. Seton has never discovered a nest. Nearly all the individuals I saw were in the brown plumage;

only three or four wore the adult bluish ash-coloured dress, but Mr. Seton says that adult specimens are much more often seen at the time of the spring migration. This bird often comes and inspects the settlers' chickens, but seldom carries off any except very young ones—gophers, mice, and grasshoppers being its usual prey. It is exceedingly easy to shoot, and one or two dead ones may often be seen lying round a farmer's house. The Harrier became a much scarcer bird as September wore on.

The Turkey Buzzard, *Cathartes aura*, is probably now a less common bird than when the Buffalo was an inhabitant of the prairies, but is still not unfrequently seen, especially if there be a dead horse or other animal in the neighbourhood. Its powers of flight are magnificent.

On the evening of September 4th a flock of sixteen noisy Wild Geese flew with a swift flight over Carberry to the south-eastward. They formed the vanguard of the great army of migratory birds which, going northward in the spring to breed in myriads on the shores of the Arctic Sea, returns south again in the autumn with its numbers increased by the yearling birds.

After the date mentioned, the migration among wildfowl and raptorial birds became much more marked. Goshawks, *Astur atricapillus*, though formerly unseen, became fairly common.

The Peregrine, *Falco peregrinus*, hitherto scarce, was now the reverse, though still not very numerous. On the 11th one perched on a fence close to the house; I was just on the point of firing at him with a rifle, when he rose; then, after sailing once over the chickens, he hovered over them for nearly half a minute as cleverly as any Kestrel could have done—indeed, so stationary in the air was the bird that I essayed a shot, but the bullet missed.

About this time, too, Buzzards became much more numerous. On the 14th an old male specimen of Swainson's Buzzard, *Buteo swainsoni*, in very ragged plumage, was brought to me.

The migration among raptorial birds at this period was made still more obvious by the decrease, as already mentioned, of the Harriers, and by the sudden increase in the numbers of the beautiful little American Kestrel, or as it is always called, the "Sparrow Hawk," *Falco sparverius*. Although I had during the summer found this in fair abundance in the woods and among the trees growing on the sand-hills (where it breeds in

the deserted holes of the Golden-winged Woodpecker), it became far more abundant round Carberry on September 7th, and on that day alone I saw more than during the whole of the rest of the time I was in the country. All day long they were round the house, sitting tamely on fence-posts and buildings, and often chattering like their European brothers. At one spot about a mile from the town, where there was a cluster of trees, I found what I can scarcely call by any other name than a *flock* of them, as from twenty-five to thirty remained there the whole day. For several days after the 7th they were fairly numerous, but all disappeared about the middle of the month. The few that were shot had been feeding on grasshoppers only, and on one occasion I watched through a telescope a bird that was catching grasshoppers among some potatoes.

A most comical affair happened one day in connection with three Goshawks. A friend of mine had shot a Harrier, and left it near his house. Some time after, as some chickens were feeding on the maggots in the body, three Goshawks appeared on the scene and quickly swooped at the birds, to all appearance carrying one off to a neighbouring field. Mr. Seton, who followed to avenge the death of this supposed hen, soon shot two of the Goshawks, when he found that, instead of carrying off a hen, they had possessed themselves by mistake of the putrid and dried-up body of the Harrier!

Numerous as were many of the larger Hawks at this time, I was told that they were far more so at the time of the spring migration northwards; so it appears probable that for some reason they follow different routes upon the two journeys, as is often observed in England. The same remark probably applies to the Whooping Crane, *Grus americana*, for, although in the autumn I did not see one, it is said to be common in spring-time.

The American Bittern, *Botaurus mugitans*, is pretty common in the moister parts of the country,—near the Red River, for instance,—where I have often seen it disturbed by the passing train.

On August 30th a friend shot a young specimen of the Passenger Pigeon, *Ectopistes migratorius*, as it sat upon a tree near Carberry, but this was the only specimen seen during my visit.

No small portion of the Manitoban settlers' diet is formed of

the flesh of the Sharp-tailed Grouse, *Pediceetes phasianellus*, always known as the "Prairie Chicken." To this bird, which is resident in Manitoba throughout the year, Mr. Seton has devoted much attention, and has elucidated many interesting points in its natural history. The nest is usually formed in long grass, generally near trees. In it the hen deposits fourteen to sixteen eggs, which, curiously enough, are rather smaller, as Mr. Seton points out, than those of the "Quail" (Bartram's Sandpiper), a bird just one-eighth of its weight. The pairing is carried on in a very absurd fashion, parties of from one or two to twenty assembling in the early morning on some small hillock, and there dancing in a manner which is most ludicrous to behold. About the middle of August, or earlier, a row of stiff bristles commences to grow on each side of the toes of both old and young. These are fully grown by October, and henceforth the birds are provided with snow-shoes for use during the winter. In spring these bristles entirely drop off. The birds spend the summer out on the open prairie, and while it lasts they seldom perch on trees; but in winter they all adjourn to the bluffs and woods, and spend the time there feeding on the buds of the trees, and at night diving down into the soft snow-drifts for warmth and shelter. Although they bury themselves to the depth of about a foot, many are killed by wolves and foxes, whilst others are fatally imprisoned should a slight thaw and subsequent frost harden the surface of the drift. In early spring, before the snow is gone, they emerge again upon the prairies where the hips of the wild prairie-rose, which are held up above the snow, provide them with food, while the excessively hard seeds the hips contain act as a substitute for grit in the stomachs of the birds. Early in May they feed, like many other prairie animals, upon the blossoms of the abundant sandflower or prairie anemone, *Anemone patens*, var. *nuttalliana*; and later on they consume quantities of grasshoppers, together with seeds and berries, but they never, so far as Mr. Seton has observed, touch grain.

The Killdeer Plover, *Ægialites vociferus*, is not uncommon round some of the lakes.

On August 3rd we shot several specimens of the Lesser Yellow-shanks, *Totanus flavipes*, and one of the Greater Yellow-shanks, *T. melanoleucus*, round a lake near Carberry; they were clearly on migration, as they were the first of their kind seen.

On July 10th, 1884, I shot a specimen of the Solitary Sandpiper, *Rhyacophilus solitarius*, at Maple Creek, 597 miles west of Winnipeg; it was doubtless breeding. In the dry bed of the creek I also caught a nestling bird, which was probably of this species.

During the summer no bird is more familiar on the Manitoban prairies than the Upland Plover or Bartram's Sandpiper, *Bartramia longicauda*, commonly there known as the "Quail," from its note. Surely no bird ever differed more completely from the generality of its relatives than this! It is a Sandpiper which does not appear to frequent marshes, which breeds habitually on the dry open prairies, and which is frequently to be seen perched among the branches of trees. Its tameness is excessive. Often when driving over the prairie I have seen it remain within three yards of the passing vehicle without the slightest concern. When on the wing, it offers a shot so temptingly easy that few can resist. Its note is a highly remarkable one, not easily forgotten when once heard. Dr. Coues well describes it as a "long-drawn, soft, mellow whistle, of a peculiarly clear, resonant quality." It breeds abundantly on the open prairie, and I have several times caught the young in down. The majority left Manitoba towards the latter end of August, but I was several times surprised at hearing or seeing a belated pair until quite late in September.

The Carolina Rail, *Porzana carolina*, is common during the summer among the reeds and rushes round the lakes, where it also breeds.

In the open and less frequented parts of the country, like the sand-hills south of Carberry and the prairies of the Upper Assiniboine, the Sand-hill Crane, *Grus pratensis*, breeds pretty commonly. They often feed in the swamps, and their loud, hoarse, rattling croak may be heard for long distances when their solitudes are invaded. Their speed when on foot is very considerable; I one day drove across a moist portion of country after a pair, which for a short time seemed inclined to rely for safety on their legs rather than on their wings. During September small parties of from ten to twenty were seen almost daily passing over southward at an immense height, and attracting attention by their loud croaking, which gradually died away in the distance as the birds disappeared.

During the whole of the autumn the southward migration of

wildfowl was very noticeable. Until late in September small flocks of from twenty to thirty Wild Geese were often to be seen flying over, generally in the shape of a well-marked V. They usually went towards the south or south-east, which latter especially is, I understand, the general direction of the autumnal migration over Manitoba; so that it seems probable that the birds, in coming from the extreme north, follow the line of great lakes extending from the Great Bear Lake to Lake Winnipeg, afterwards following the valley of the Red River, crossing the narrow watershed into the valley of the Mississippi, and wending their way along it still further to the southward. During this autumnal movement the number of ducks frequenting the lakes and ponds throughout Manitoba is prodigious. I shall not soon forget the hundreds I saw on the innumerable ponds between Rapid City and the Oak River, whilst on an excursion towards Fort Ellice, in the middle of October, 1883. Yet those I saw must have been as nothing compared with the abundance to be seen in some other places. A friend who had several days' shooting at Totogon, near the south end of Lake Manitoba, about the end of September, describes the ducks as being so numerous that only the terms "acres" and "millions" could adequately express their abundance. The majority were Mallards, *Anas boscas*, but there were also Blue-winged Teal, *Querquedula discors*, Green-winged Teal, *Q. carolinensis*, Scaups, *Fulix marila*, and others. The Mallard, with various Shovellers, Scaups, Pintails, and Teal, breeds regularly in the lakes and sleughs. When travelling towards Winnipeg by the line running northward from the United States boundary on June 13th last (1884), I saw many newly-hatched broods of ducklings, both Teal and Mallard, swimming about in the ditch beside the track; the old birds rose and flew off as the train approached. At least two species of Tern breed very abundantly on the islands in some of the larger lakes, while several Grebes are not uncommon in the same situations.

In conclusion, I will only add that there still is in Manitoba a large field for ornithological work. If only a few of the many young men of good education who have recently emigrated thither could be persuaded to turn some of their attention to the study of its birds, many highly interesting facts would certainly be brought to light.

ADDITIONAL NOTES ON THE FINWHALE FISHERY ON  
THE NORTH EUROPEAN COAST.

BY ALFRED HENEAGE COCKS, M.A., F.Z.S.

TOWARDS the end of last summer (1884) I again visited some of the Finmarken whaling establishments, some account of which I have already given.\* The season was rather an early one, and was virtually over before my arrival. The first whale I saw was a very unexpected sight; on my passage from England, when near the head of Christiania Fjord, only about six English miles from Christiania itself, at about 8 a.m. on July 28th, we passed a White Whale. As it repeatedly came to the surface to blow, swimming in its characteristic active manner, we obtained very good views of it; it appeared to be a full-grown example. Herr Collett afterwards informed me that it was seen several times in the Fjord; on the same day that we saw it, it was mentioned in the newspapers as having been seen at Fredrikstad, and the last occasion on which Herr Collett had news of it was as seen at Holmestrand on August 13th. He also informed me that a White Whale had been seen in Christiania Fjord during the previous summer as well.

Whales were conspicuous by their absence on the passage north from Thronhjelm. When approaching the Lofotens, on August 2nd, there were a few small *Delphinidæ*, probably Porpoises—two or three being perhaps large enough for Dolphins; and the next day, while still among the islands (near Kjeö), after seeing a few more Porpoises or small Dolphins, we passed two small whales in company, each between thirty and forty feet in length; to the best of my belief they were of different species, one apparently a Humpback, the other a Rorqual (not *B. sibbaldii*, I think). On afterwards mentioning this to the foreman of one of the Vardö factories, he said it was quite likely that I should have seen two whales of different species in company, as he had himself, on the last day of July (1884), seen a male Common Rorqual pairing with a female Humpback. I give this statement of course on his authority; but he is a man as little likely to be mistaken on such a point as anyone, and I am quite sure it was made *bonâ fide*.

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\* See 'Zoologist,' 1884, pp. 366, 417, 455.

I reached Captain M. C. Bull's factory at Sörvær, on Söröen, a short distance to the west of the North Cape, on August 6th; up to the date of my departure (the 9th, and I believe no more whales were taken subsequently) his total for the season was thirty-five whales, against ninety in 1883. However, more oil was obtained from this smaller number, as a good many of them were Blue Whales, and only three were Rudolphi's Rorqual, against fifteen of this small species the previous year. The flesh of Rudolphi's Rorqual is good to eat, but that of all other kinds (or at least all the other *Balenopteridæ*) is of too loose a texture, and in every way inferior. Herr F. E. Weil, of Drammen, has an establishment here for tinning the "beef" of this whale—a branch of the widely-known "Christiania Preserving Co." The meat is best when the whale is not killed outright, but has time to bleed well. This season the business has been a very unprofitable concern, as Herr Weil has about a dozen men employed, who arrived at Sörvær in May, and the three Rudolphi's Rorquals only gave them work for six days! Capt. Bull showed me a bone which he said he had found loose in the flesh of a large Blue Whale seventy odd feet long, "near the flipper," where neither he nor any of his men had ever seen a bone before. It was on the left side, and there was no corresponding bone on the opposite side. It measures  $11\frac{3}{4}$  inches in length, and  $1\frac{3}{4}$  inch in circumference at the centre. It very closely resembles a clavicle; but it is perhaps more natural to suppose that there is some error as to the position it was found in, and that it is in reality simply a floating rib.

Capt. Bull manufactures excellent knitting-needles out of the mandibles of whales; this bone is the only one in a whale's skeleton sufficiently hard and compact for this purpose.

I here first obtained specimens (and they were to be had *ad. lib.*) of a Copepod, parasitic or rather epizoid upon the baleen-plates of the Blue Whale, which may apparently always (or at least very generally) be found there in almost any quantity; while, curiously enough, neither it nor any corresponding species has been found on the baleen of the Common Rorqual or any other whale. This Copepod was discovered by Herr Per O. C. Aurivillius, Licentiate of Philosophy of Upsala, and described by him under the name *Balenophilus unisetus* (nov. gen. et spec.) in a pamphlet published in Stockholm in December, 1879. I have brought home

a thousand or more specimens, but unfortunately did not have an opportunity this year of getting any from a freshly-killed whale. As this pamphlet is not likely to have had a wide circulation in England, and as the tiny subject of it has not been mentioned, to my knowledge, in any other publication, I copy the generic characters as given by Herr Aurivillius:—

“Char. gen.: Corpus fere cylindricum. Antennæ anticæ octoarticulatæ; posticæ biarticulatæ ramo secundario articulo uno parvo. Palpus mandibularum minimus, tuberculo setigero formatus. Palpus maxillarum simplex. Maxillipedes anteriores processibus cylindraceis duobus instructi; posteriores validi, subchelati. Pedes primi paris prehensiles; rami ambo tri-articulati; pedes secundi paris ramo interno bi-, externo tri-articulato; tertii et quarti paris ramo interno uni-, externo tri-articulato; quinti paris rudimentarii. Sacculi ovigeri duo. Nauplius transversaliter ovalis, tribus paribus extremitatum non articulatis, brevibus instructus.”

“Generic character:—The body nearly cylindrical. The foremost antennæ eight-jointed; the posterior two-jointed, with short, single-jointed ramus. The mandibular palp consisting only of a bristle-covered knob. The maxillary palp single. The anterior maxillipedes furnished with two cylindrical processes; the posterior powerful, with strong nipping-claws. The first pair of feet with strong claws, and three-jointed rami; the second pair of feet with the inner ramus two-, the outer three-jointed; the third and the fourth pairs with the inner ramus one-, the outer three-jointed; the fifth pair of feet rudimentary. Egg-sacks two. Nauplius broader than long, with three pairs of short, unjointed limbs.” [Translated from the Swedish.]

Herr Foyn has now a factory at Böle, on Söröen, in addition to his original one at Vadsö, which was not given up, as was reported at the end of 1883. He possesses four steamers (whether all whalers or any of them tugs I am not sure), and they come in either here or to Vadsö, according to whereabouts they have been cruising, and are not attached to either factory in particular. As the result of his “prospecting” off Iceland in 1883, Herr Foyn built a factory on that coast—in what part I do not know; just as it was finished (if my information is correct) an Act was passed by the Icelandic “Thing” forbidding whaling on that coast, presumably for fear of that happening

which many persons predict will shortly come to pass on the north coast of Norway, namely, that the whales, decimated and harried, will cease to drive the shoals of fish in to the coast within reach of the fishermen. Herr Foyn at once therefore ordered the factory to be pulled down again, and on our passing Mehavn (just to the east of the Nord Kyn), on the morning of August 12th, we found Herr Foyn's two sailing vessels with the materials of the factory lying there, having arrived the previous day; they were to begin discharging on the following day, and the factory will no doubt be completed in time to use next season.

On August 11th, between Repvaag and Kistrand (East Finmarken), we passed a small whale, fifteen or twenty feet long, which I did not see well enough to identify, but think it was most likely to have been a young example of one of the species of *Balænoptera*.

On the 13th I visited Jar Fjord. There are three whaling establishments in this Fjord, besides "Jar Fjord's Kraftfoder og Lim Fabrik" (= Guano and Glue Factory), which buys the krangs of whales from the other factories after the blubber has been removed, and reduces the whole mass to the above useful commodities. The krang of a large female Blue Whale was hauled up on the slip here, which measured (as I saw for myself) seventy-five Norwegian feet in a straight line from nose to fork of flukes, that is, about seventy-eight feet two inches English. It had lost something of its length, from the under jaw having been removed, which projects beyond the upper, and also the loss of this bone brought the nose down at an angle, still further shortening the length, but, on the other hand, the cutting-away of so much of the muscles, &c., would cause the remainder of the mass to settle down flatter, and thereby increase the length a little. The flipper measured eleven feet five inches; the skull twenty feet ten inches (both English). It had been shot on the 7th, and was said to have contained a fœtus measuring about nine or ten feet. The unfortunate beast had been previously wounded, and when taken was found to be still living, with nearly all the flesh on the right side fallen away!

A lower jaw-bone of this species lying at the Jar Fjord Whaling Factory measured twenty-two feet eight inches English, following the curve on the outside. The manager of this

company, Capt. Evensen, talking of the length of Blue Whales, told me that his steamer is eighty-four feet long (presumably Norwegian feet, and =  $12\frac{1}{2}$  inches English), and assured me that he had this season taken a Blue Whale which was longer than the steamer.

We took on board 600 sacks of "Krafftoder," an artificial manure of krang and bones dried, ground, and mixed, the freight on which to Hamburg amounted to £75 (= 1500 marks). There, I understood, it undergoes some chemical process before it is ready for the market.

At Vardö, on August 15th, I had an opportunity of seeing a so-called "Bastard" (= hybrid) whale, which to me appeared to be simply a Common Rorqual. It was a male, measuring (I was told) sixty-four feet six inches English, and was picked up dead at sea. The left side of its under jaw at the tip end was black, while the corresponding portion of the right side was white. The black extended down the left side of its chin for a yard or so from the symphysis of the jaw, and thence only the concavities of the furrows were black. The concavities of the central furrows were buff-coloured, the first few concavities on the right side black, with slight streaks of white, which gradually widened so as to fill the whole width of the concavities. The flipper on the outer side was blue, with almost a brownish tinge at the proximal end; the inner side white, which extended round the anterior margin to the outer side; while the blue of the outer side overlapped at the posterior margin, and gradually faded into white—that is, a width of about eight inches was blackish blue, the colour running out about thirteen or fourteen inches short of the tip of the flipper, but another "wash" of grey-blue extended below this again. Length from head of humerus to tip, eight feet. The inside of the mouth and the tongue black, the latter with one or two small white patches.

The "Haabet" Company in Vardö, in addition to their steam whalers, had two schooners employed this season in Bottle-nose fishing in the direction of Iceland. One of them had returned, and was lying in Vardö at the time of my visit in August; she had taken nine Bottle-noses, which, I was told, gave from nine to ten casks of blubber apiece. The casks always used in Fiamarken are the American petroleum-casks. This would, I believe, amount to much less than the two tons of oil Capt. D.

Gray found them (Proc. Zool. Soc., 1882, p. 727) to yield, independently of spermaceti.

Contrary to what one would expect, the further east the longitude the later it appeared that whales remained off the coast. In West Finmarken the season was over by the beginning of August; at Vardö the last whale was the Common Rorqual previously mentioned as found dead at sea, and brought in on the 15th of that month; while such of the whalers as went out during the week I remained there invariably came back without having seen a whale; and at the date of my departure (the 21st) they were beginning at the factories to clear up ready for their return south, and all started, I believe, at the beginning of September; while on the Murmansk coast I met with the following whales at later dates:—As we passed Kobholm Fjord, on August 21st, we passed a whaler steaming out, towing the krang of a whale, no doubt on the way to the “Kraftfoder” factory in Jar Fjord; this had been most likely killed within the last two or three days, and at any rate was probably captured later than the last taken into Vardö. On August 22nd, at the whaling station at Arra, there was a large Blue Whale; and on the same day, at the whaling station at Eretiki, a Blue Whale, and a Common Rorqual; all three, I believe, killed on the previous day. On the 24th we met one of the Russian whalers towing a Common Rorqual off Noknev Island about long. E. G.  $38^{\circ} 30'$ ; and the evening of the same day, when off Swjatoi Nos (about long.  $39^{\circ} 45'$ ), I saw a whale—apparently a Humpback—heading straight out from the land; when it had got well out to the N.N.E. of us, I made out with the help of a glass that it was joined by a second. A few minutes later I saw a third whale, probably the same species, ahead of the ship, and heading in the same direction as the first. Ten minutes or so later again I saw two whales in company, which I am tolerably certain were Common Rorquals.

I saw no whales in the White Sea while on the way to Archangel, but on September 7th, when leaving the White Sea and approaching Gorodetsk Point, we passed several. First a pair of Common Rorquals heading S., apparently playing together; they frequently made the water foam, and once or twice a flipper was raised straight out of the water, showing that the whale was then on its side. One of them, a male, turned

over on its back, when the white colour somewhat tinged with slate-blue helped to make me more sure of my identification. At least a furlong further *north* (perhaps more) than where I had last seen the couple heading *south*, I counted four whales blowing at once, and heading *north*; there must therefore have been at least six whales altogether, perhaps more. I watched them for about a quarter of an hour continually blowing; indeed one at least was almost constantly in sight. I feel sure they were all large Common Rorquals. They were all to landward of us, perhaps not so much as three miles out. The first mate (a native of the White Sea coast) said he had never previously seen whales so far in the White Sea. We thence went up the Novaya Zemlya coast (which we were unable to approach for pack-ice) as far as the north end of Möller Bay (lat.  $72^{\circ} 29'$ ), thence back to Archangel, whence I returned westwards, coasting along the Murmansk and Finmarken coasts, but did not see another whale, a few Dolphins being the only cetaceans subsequently met with—in each case *D. tursio*, I believe.

At Eretiki, Herr Goebel, the manager, told me that all the last whales were taken off Swjatoi Nos, that is, the eastern limit of the whalers' cruising-ground, the latest dates of the capture of each species being—Common Rorqual, September 2nd; Humpback, September 16th; and Blue Whale, September 18th.

Capt. Andrieff (Imp. Russian Navy), of Arra, kindly showed me the different qualities of oil, of which there are six varieties, but only reckoned as three classes in the market, namely:—1st class: oil from the back of the Common Rorqual, which is clearer than that of the Blue Whale. 2nd class: 1st and 2nd qualities from the blubber of the under side, intestines, tongue, &c. 3rd class: 1st variety, from the under jaw-bone; 2nd do., from the muscles; 3rd do., from the residue.

When watching the first pair of whales, on September 7th, I noticed three or four gulls—apparently Kittiwakes—stooping as if to pick something off the water close behind them. This might have been small fish or some form of invertebrate animal, forced up to the surface in the whirlpools caused by the whales; or it may have been something coming directly from the whales, as parasites (though no parasite has as yet been found, I believe, on the Common Rorqual), or oil, or droppings.

I would suggest that it is probable that the whales leave the

coast, not, as is commonly said, in consequence of the water getting too cold for them, but when their various food-supplies have left; and that it is the latter, and not the whales, which object to the cold water.

Measurements are apt to be extremely untrustworthy, but, for want of more accurate information, I give the following list of *foetuses* which I was told of last season:—

*Common Rorqual*—

Date of killing mother.	Locality.	Length of <i>foetus</i> in English ft. & in.
April . . . . .	Vardö . . . . .	1 ft. 4½ in.
(each succeeding one bigger than the previous.—Capt. Berentsen.)		
June 13 (or 25)* . . .	Eretiki . . . . .	4 ft. 6 in.

*Blue Whale*—

July 21 (or Aug. 2)* . .	Eretiki . . . . .	13 ft.
August 7 . . . . .	Jar Fjord . . . . .	9 or 10 ft.†
Some days previous } to August 14 . . }	Vardö . . . . .	15 ft.
August 15 (or 27)* . .	Eretiki . . . . .	15 ft. 6 in.

A comparison of the numbers of each species of whale killed does not show the relative degree of commonness of each, as, if Blue Whales are to be found, the other *Balænopteri*dæ are left alone; if this species is not to be had, the Common Finner is the next sought after; and if this is not to be had, the whalers turn their attention to Humpbacks. Whether this last species or Rudolphi's Rorqual is the more valuable I do not know, but the former is certainly the commoner of the two. The example of Rudolphi's Rorqual killed by the Eretiki whaler was taken off Teriberka on August 15th; and in Vardö I was told that they appear at the end of the season, and that they were expecting to see some about the time I left there (August 21st). A man

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\* These first dates, which are those I was given, are probably according to the Russian style, and, if so, the dates enclosed in parentheses would be the equivalents according to our new style.

† This whale having been very seriously wounded some time previously, the growth of the *foetus* may have been checked, or the reputed length may have been merely a guess: for I was likewise told of a Blue Whale *foetus* (at Eretiki) from a whale killed at the end of July or beginning of August, which measured 18 feet (= 18 ft. 9 in. English).

I spoke to in Jar Fjord was three seasons with Herr Foyen at Vadsö, and during that time they only took one of this species ; since he has been at Jar Fjord (I think this was his third season) they have not killed any ; but, as before said, it does not follow from this that none were seen. Capt. Ellefsen, of Vardö, told me he had seen a good many Humpbacks this season, but they were so shy he had taken none.

The 'Vardö Post' for September 7th last, from which I have gained much of the matter in the following list of the Fin-whale fishers, adds the following paragraph:—"The total capture amounts therefore, as far as East Finmarken is concerned, to 379 whales, against 389\* the previous year; the profit is reckoned, however, to be as good as the previous year, since the whales captured this year are larger. Some companies have sustained loss this year also, and possibly no company has made very considerable profits, owing to the bad price of oil. The Haabet Company's guano factory has been in activity the whole summer, and has done well; about 120 krangs of whales have been converted into guano by this company in the course of the summer. At the artificial manure (Kraftfoder) factory in Jar Fjord about seventy krangs have been worked up. The Christiania Whaling Company is building a larger guano-factory, which in a short time will be fully ready, but can hardly come into use this year (*i. e.*, 1884). With these three guano-factories the krangs of all the whales captured will probably for the future be manufactured into guano, to the great gain of all the whaling companies, since high prices are paid for the krangs by these factories."

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\* This is seventeen less than the total given by me in 'The Zoologist,' 1884, p. 463. I do not know how this difference is to be explained, but probably by the whales picked up dead not being all included in this total.

COMPANY.	MANAGER.	PORT OF REGISTER.	WHALEERS.	TUG.	BLUE WHALES.	COMMON RORQUAL.	RUDOLPH'S RORQUAL.	HUMPBACK.	TOTAL.	WHALEERS' NAMES.
<i>East Finnmarken</i> : Kobbholm Fjord.	A. Grønn ...	Sandefjord ...	2	1	14	28	0	5	47	Skjold, Værg.
Stokke, Pasvig .....	A. Ellevsen...	Tønsberg ...	1	Part of (time 1)	12	26 or 25	0	1 or 2	39	Varanger.
Jar Fjord .....	Evensen .....	Do. ....	2	1	11	28	1	5	45	Jar Fjord, Hvalen.
Do., Madvig .....	L. Hansen ...	Christiania ...	1	1	3	6	0	0	9	Madvig.
Do., Tamasjok .....	C. Bruun .....	Tønsberg ...	1	1	7	10	0	2	19	Emanuel.
Foyn's Establish-ments { Vadsø	T. Bull .....	Do. ....	4	0	{ ...	...	...	...	12	Gratia, Spes-Fides.
{ Bøle	.....	.....			...	...	...	...	1	Providentia, Martha.
(W. Finnmarken)	.....	.....								
Kilberg .....	Wiborg .....	Thronthjem.	2	0	...	...	...	...	15	Kilberg.
Mainland opposite Vardö—	Castberg .....	Christiania ...	2	0	11	19	0	4	34	Alpha, Beta.
Christiania Whaling Co. ... }	Berentsen ...	Laurvig .....	2	0	18	12	0	6	36	Fiskeren, Nimrod.
Do., Laurvig Whaling Co. ....	G. Bryde .....	Sandefjord ...	1	1	12	12	0	2	26	Thekla.
Do., "Thekla" .....	G. Sørensen .	Do. ....	2	1	16	11	0	1	28	Vardohus, Haabet.
Vardö, "Haabet" .....	H. Ellevsen .	Tønsberg ...	1	0	6 or 5	18 or 19	0	0	24	Nora.
Do., Skjærsmæs .....	Foden .....	Bergen .....	1	0	...	...	...	...	25	Skytten.
Sylte Fjord .....	Berg .....	Tønsberg ...	1	0	...	...	...	...	24	Viktoria.
Do., Dahl's Establishment .....	.....	.....	1	0	...	...	...	...	11	Nordkap.
<i>West Finnmarken</i> : Tu Fjord .....	M. C. Bull ...	Tønsberg ...	2	0	...	...	3	...	35	Fin, Fry.
Sorvær, on Söroen .....	.....	.....								
			26	7					430*	

The steamer 'Duncan Grey,' J. Gjæver, Manager, of Tromsø, started near the end of the season to hunt from Vardö (without a factory), but captured nothing.

<i>Russia (Murmanski coast)</i> : Eretiki	Goebel.....	Petersburg ...	2	0	13	10	1	12	36	.....
Arva .....	Andrieff Imp. (Capt. Imp. Russ. Navy)	Do. ....	2	1	6	8	0	5	19†	Vladymir (tug).
									55	

Total for North Europe, nearly 500 whales, if not quite that number.

\* I do not know whether any of these lists include whales picked up dead at sea; but I know in the case of the "Haabet" Co. 4 such are to be added to the total given above, so that the grand total for Finnmarken is probably not far short of 450 whales. † Includes three found dead.

ON THE OCCURRENCE OF THE WHITE-BILLED DIVER,  
*COLYMBUS ADAMSI*, ON THE BRITISH COASTS.

By HENRY SEEBOHM, F.L.S., F.Z.S.

THERE can be little doubt that the White-billed Diver is perfectly distinct from the Great Northern Diver, and has as much claim to be regarded as a British bird as other more or less accidental visitors to our islands. It was first discovered about the year 1830 by Capt. James Clark Ross, who obtained three examples in Boothia, north of Hudson's Bay, during his cruise in the Arctic Regions in the 'Victory' (App. Sec. Voy. N.W. Pass., Nat. Hist., p. xlii). Unfortunately Sabine persuaded Capt. Ross, against his own better judgment, that the examples which he obtained were only very old males of the Great Northern Diver. One of these examples was presented to Audubon, and another of them, in full breeding plumage, may now be seen in the museum of the Literary and Philosophical Society in Hull.

Twenty years afterwards it was rediscovered by Mr. Adams, who obtained it in Alaska during the cruise of the 'Enterprise.' This example, also an adult in full summer plumage, may be seen mounted in the gallery of the British Museum in South Kensington. It was described by G. R. Gray, who named it after its discoverer (Proc. Zool. Soc., 1859, p. 167). In 1852 a British example was shot at Pakefield, on the Suffolk coast, in early spring, and is now in the collection of Mr. J. H. Gurney, at Northrepps Hall, near Cromer. It is in winter plumage (Sclater, Proc. Zool. Soc., 1859, p. 206). A second British-killed example, also in winter plumage, is in the museum at Newcastle, and Mr. Hancock assures me that it was shot on the Northumberland coast, although the precise date is unknown.

The breeding range of the White-billed Diver extends in the Arctic Regions from Hudson's Bay across Alaska and Eastern Siberia, at least as far as the Taimoor Peninsula, and probably to Nova Zembla and the Kanin Peninsula. In winter it has been known to stray as far as Japan and the British Islands.

This species closely resembles the Great Northern Diver in the pattern of its plumage, but may be distinguished at all seasons of the year by its large ivory-coloured bill, which

measures from the frontal feathers to the tip from  $3\frac{1}{2}$  inches in young birds to  $3\frac{3}{4}$  inches in adults. The bill of the Great Northern Diver is black (paler at the tip in young birds), and only measures  $2\frac{3}{4}$  inches in the young and  $3\frac{1}{2}$  inches in adults. In summer plumage the white spots on the scapulars are larger in the White-billed species, whilst those on the flanks and upper tail-coverts are smaller than in the allied species. But the most important distinction is to be found in the number of white streaks in front of the throat and on each side of the neck. Of the former there are about half-a-dozen in *C. adamsi*, and about a dozen in *C. glacialis*, whilst of the latter there are about ten in *C. adamsi*, and about eighteen in *C. glacialis*.

It is extremely probable that other British-killed examples of the White-billed Diver may exist in collections. Any information on the subject would be of great value to the writer, and would be well worth recording in the pages of 'The Zoologist.'

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## NOTES AND QUERIES.

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**Important Additions to the National Collection of Birds.**—Ornithologists will be glad to hear that the magnificent collection of Neotropical birds belonging to Messrs. Salvin and Godman has recently become national property by presentation. This collection is one of the most famous in the world, and comprises not only all the specimens obtained by Mr. Osbert Salvin and Mr. F. Du Cane Godman during their travels in Central America, but also all those received by them from their numerous collectors in different parts of Southern America. This is indeed a noble gift, and, with the recent acquisition of the Sclater collection, renders the series of American birds in the British Museum undoubtedly the finest in the world. The number of specimens in the Salvin-Godman collection is about 23,000; those in the Sclater collection about 9000 more.

**The Zoological Record.**—At a recent meeting of the Council of the Zoological Record Association, Prof. Jeffrey Bell was elected Editor in succession to the late Mr. E. C. Rye.

## MAMMALIA.

**Polecats in Cornwall.**—Polecats, no doubt, are rapidly disappearing from the British Isles, but I was surprised to read Mr. Cornish's note (p. 107), to the effect that he had only met with one specimen in West

Cornwall in thirty-seven years. I received an adult male, alive, from a man named Marsh, then living in Penzance, about the summer of 1873 or 1874 (I am writing away from home, and consequently from my notes), which was presumably caught in the neighbourhood, though it is of course possible that he may have received it from a distance. It was freshly trapped when I obtained it, and having recovered from the injury to its leg, it eventually (during my absence from home) made its escape from its cage, which was enclosed in a large one containing Wild Cats, and was supposed to have been killed and eaten by them, although a fragment of skin shown me on my return looked remarkably like rabbit-skin. Anyhow I never saw or heard anything more of the Polecat. Some three or four years ago I was assured by a farm-boy at Madron (the very place where Mr. Cornish's specimen was taken) that "Fitchews" existed there, and that his father caught them sometimes; indeed he spoke as if they were not uncommon, and though that was very likely not the case, yet at least it seems to show that there were still a few thereabouts. In East Cornwall I have only heard of one occurrence of late years, an example having been obtained about 1880 on Col. Grylls' property at Lewarne, about five miles west of Liskeard; none had previously been seen there for many years.—ALFRED HENEAGE COCKS (Thames Bank, Great Marlow).

**Bechstein's Bat not found in Berkshire.**—In a note I sent you last December (Zool. 1884, p. 483) I mentioned Bechstein's Bat as having been found at Godstow. The specimen in the Oxford Museum, to which I referred, labelled and recorded ('Midland Naturalist,' July, 1883) as this species, is certainly *V. Nattereri*, possessing the hairs on the interfemoral membrane which are said to be a specific distinction, and not differing from the specimens on the same shelf labelled Natterer's Bat, in the length of its ears or otherwise. We know, moreover, from his notes in 'The Midland Naturalist,' that the captor was not acquainted with Natterer's Bat.—J. E. KELSALL (Ball. Coll., Oxon).

#### BIRDS.

**Cuckoo's Eggs.**—On June 5th of last year I found in a nest two eggs of the Common Whitethroat and a Cuckoo's. The Cuckoo's egg was unusually handsome, somewhat resembling a finely marked egg of the Greenfinch, but having a rich creamy ground-colour. Within a few minutes I found another, about a hundred yards away, also in a Whitethroat's nest, and of a precisely similar description; there were four Whitethroats' eggs slightly incubated. On June 17th another Cuckoo's egg was found in a Whitethroat's nest, precisely similar to the above two. The position of this nest was about equidistant from the others and some 120 yards away, and contained three Whitethroat's eggs. I have no doubt

but that these three Cuckoo's eggs had been laid by one bird. If this be so, it strengthens the idea that each female Cuckoo probably lays its eggs only in the nests made by one species of bird. It seems probable, too, that a Cuckoo reared in, say, a Whitethroat's nest would by-and-bye lay its eggs in Whitethroats' nests; and that Whitethroats' nests would be selected by a sort of hereditary instinct. Dr. Baldamus, if I remember correctly, thought that the Cuckoo when about to lay was influenced by the colour of the eggs in the nest before it; and that in consequence its eggs assimilated in colour to those already laid by the owner of the nest. If there be anything in such colour assimilation, would not the fact I have above recorded suggest that it may in part be due to gradual and hereditary influence?—A. B. FARN (Fairlawn, Stone, Dartford).

**Edible Birds' Nests.**—The Alga of microscopic dimensions found by Mr. Pryer in the cave inhabited by the Swifts which build the edible nests (noticed by him, pp. 43—50), is an undescribed species of *Urococcus*. The members of the group to which it belongs are very commonly found growing on the walls of caverns. In this case the incrustation produced by the accumulation of the Algæ is of unusual thickness and of horny consistency when dry, but turns pulpy when soaked in cold water. On the outer surface there is a dark layer (black to the naked eye, but very dark greenish yellow when viewed with the microscope), consisting of the living Algæ. Beneath this outer dark layer the mass of the incrustation is white, and consists of a dense accumulation of innumerable dead bodies of the Algæ, the structure of which is barely distinguishable. In none of the edible nests which I have examined, however, is there any trace of an Alga, and it appears to be definitely settled that these are constructed from materials which are the intrinsic product of the bird. Mr. Pryer states his opinion that certain nests are made from the black outer layer of the incrustation. If such a nest were examined it would give conclusive evidence either way, since the black layer, as just mentioned, consists of living Algæ, the structure of which would be far more readily discernible than the traces of the white part of the incrustation.—GEORGE MURRAY (British Museum, Natural History).

**Red Grouse in Somerset and Wilts.**—I have ascertained from Mr. Edwards, of Wrington,—who informed me of the occurrence of the Red Grouse near that place (as recorded by me, p. 66),—the following particulars, which may be of interest to Mr. Cambridge Phillips and others of your readers. In answer to some questions which I put to him in consequence of Mr. Phillips's note, Mr. Edwards writes:—"The bird was alone. The hill on which I killed it [one of the Mendips] is about 1500 acres in extent, and the highest point about 1064 feet, according to the last Ordnance Survey. I should estimate the extent of heather at about 200

acres. Every year part of the heather is burnt, so the growth varies from last year's burning, which is quite bare, to perhaps eight or ten inches high. It is very boggy in places on the top, with a good growth of what I call 'cotton-grass,' which I suppose is a rush with white silky blossoms, but I am no botanist. [Probably *Eriophorum polystachyum*; see Dr. Prior's 'Popular Names of British Plants.'] The heather covers the top, and below that we get heath, heather, wortleberry, and bracken, which forms an excellent covert for Black-game. I killed the grouse very nearly on the top, in the heather. I might add that my old keeper declares it spent the winter of 1883 there, as he flushed a bird three times in the winter close to where I killed it, which he was certain was not a Grey Hen." I cannot agree with Mr. Phillips, or with the editorial note, in being sceptical about the Red Grouse at Wedhampton. I do not think an ornithologist like Montagu would have recorded the bird if he had not had some good evidence before him, such as Mr. Poore's word, who no doubt, like Mr. Edwards, was well acquainted with both birds, and "the part of the bird" which he says he saw. He appears to have been much struck by such an unusual occurrence, but does not seem to have had the least doubt about it. His words are, "We never remember but one instance of its [the Red Grouse] being found at a distance from the Moors. This was a female taken alive near Wedhampton, in Wiltshire, in the winter of the year 1794, and communicated by the late Edward Poore, Esq., who showed us a part of the bird." This seems to admit of no doubt, nor did he afterwards doubt either Mr. Poore's communication or his own identification of the part. As between a female Red Grouse and a Grey Hen I think that, like Montagu, I should have been quite satisfied with seeing "a part of the bird," and so I think would the Editor, in spite of his note. I may add that Mr. Edwards tells me in his note he had a good Black-game season on his part of the Mendips, as we had also on the Quantocks.—CECIL SMITH (Bishops Lydeard, Taunton).

**Breeding Habits of the Lake Gull.**—One of the prettiest of the water-fowl of the alpine country in New Zealand is the dainty little Lake Gull (*Larus pomara*, Bruck.), the very picture of neatness and purity of feather; but it is my intention to address myself to the peculiarities of its breeding habits rather than to give a description of the bird itself. In the hot days of the month of December this bird is fully occupied with domestic cares: it seems somewhat fanciful as to the selection of a site for the nursery; numbers flock to one special spot, which for some reason is preferable to any other within a radius of many miles. It is gregarious; of that no one could entertain a doubt who has once been through a nursery or breeding-station. Last season choice was made of a position on the narrow pebbly shore of Lake Camp, that lies under the Harper Range, in the Upper Ashburton district. The place selected was not far from a

track, near a fence; the opposite side of the tarn would have been far more private, as few, very few, persons in that neighbourhood would have taken the trouble of a ride or walk round the shore to disturb the community. As one descends the steep slope to the narrow rim of beach, with noisy clamour the scared birds ascend from their eggs or young; reluctantly they rise, loth to leave their charge; the whole scene is enlivened with winged motion, as the pretty gulls fan the air, or wheel across the clear waters of the lake. Their flight is joined by swift-flying Stilt Plovers, who add their discordant squeals to the general noise. With the gulls circling in ceaseless flight, doubled on the calm surface of the mountain lake, there was a charming picture of bird-life, set in a frame of uniform dull tussock and snow-grass, tawny-coloured. Just above the water, on the bare shore, without any attempt at nest-building, the Lake Gull lays one or two eggs, in close proximity to hundreds more; one can scarcely walk through this nursery without causing damage by breakage, or by treading on some newly-hatched dark-eyed youngster, clad in grey. The eggs are remarkably beautiful, far handsomer and bolder in their markings than those of any other species of New Zealand gull. In shape they differ much, for some are very broad at the top, with the smaller end quite obtusely rounded; others ovoid, oval, or so narrowed towards the smaller end that they might be termed almost pyriform. In the 'Birds of New Zealand' Dr. Buller gives a good description of the eggs of this bird, from my collection in the Canterbury Museum. Those eggs came from a nursery on the Upper Rangitata River; I see from my note-book they were obtained on December 14th. Looking at a series of the eggs, the ground colour usually is pale olive-brown or greenish gray, with very rich splashes and large blotches of umber and dark brown. Some have most of the surface covered with round-edged marks of indistinct grey, apparently sunk into the shell; others have greenish brown or olive splashes, with large irregular shaped blotches of purplish grey; or angular fantastically-shaped marks or streaks. I referred to the appearance of certain Pied Stilts on the scene of disturbance; this is to be accounted for, because about ten yards distance from the thickly-spread carpet of gulls' eggs, was a long hollow in the flat by the narrow beach. In this natural rent, that gave something of a ditch-like shelter, were six small grassy nests of the Pied Stilt (*Himantopus leucocephalus*, Gould). Five of these nests contained in each four richly-marked eggs; the sixth contained five, an unusual number, and worth recording. It will be seen from the above account that the habits of *L. pomaræ* differ considerably from those of *L. Nova-Hollandiæ*. I have been struck with the appearance of some eggs of the last-named sea-bird, which my son Randal Potts brought from the Chatham Isles. He collected them in a cave-like opening in the cliffs near Waitangi, into which the sea entered freely at high tide. These eggs show a remarkable uniformity

in their colour and markings, the ground colour of a dull greenish brown, with round-edged marks of dark brown. Amongst the eggs of *Puffinus tristis*, all of snowy whiteness, was one specimen three inches two lines in length, with a breadth of two inches one line. Out of a number of burrows examined, in one only was an old bird at home; in this burrow lay a dead young one. Was this visit caused by affection, or by a want to rid itself of the oily food collected for the young bird? This was at Cape Young, near Aharekauri, Chatham Isles.—T. H. POTTS (Ohinitaki, New Zealand).

**Iceland Gull at Scilly.**—The Iceland Gull has occurred at Scilly, but I do not think it can be considered a rare species in this district. Mr. Vingoe, jun., tells me that quite recently he saw a flock of more than fifty on the rocks in Lamorna Cove, about three miles from Penzance. He also showed me a specimen of the Greater Black-backed Gull, killed on March 11th, with a stretch of wing five feet nine inches.—THOMAS CORNISH (Penzance).

**Hybrid between a Stock Dove and Tame Pigeon.**—During the last summer I was told by one of the labourers on the Haywood Oaks Farm (Col. Seely's), near here, that a Stock Dove with white wings had been seen there. I may mention that round the house are about forty large and very old oak trees, all of them more or less hollow, and they are frequented by a good many Stock Doves. The bird was seen, off and on, all the summer, and when shooting there with Col. Seely I asked him if his keeper might kill it for me;—this, after a deal of trouble, he did. When he brought the bird I said that it must be one of the tame ones,—there are a good many on the Farm,—but he said he was sure it was not. He said that the bird was so wild he had no end of trouble to get it, and at last shot it at quite fifty yards. This was fully borne out by the clean way it was killed. On enquiry I found out that it had been noticed as soon as it left the nest, and was always in the oak trees, and went in and out of the holes in them, and was seen feeding in the fields far away from the Farm with the Stock Doves, and never on the buildings or with the tame birds, and that it was if anything wilder than the Stock Doves. I at once decided that it must be a hybrid, and as this is the only case I have ever heard of, I think it will interest the readers of 'The Zoologist.' The description of the bird is as follows:—First six or seven flight-feathers white, others slate-grey; wing-coverts slate-colour, with a few dark marks; back white; tail and rump slate-colour, just like Stock Dove; head slate, with white patch; the neck has the lustrous colour as in Stock Dove; breast grey; legs red.—J. WHITAKER (Rainworth Lodge, Notts).

**Abundance of Greenfinches last Winter.**—During the past winter Greenfinches were unusually plentiful about Norwich and also about Brighton. I have been told that a Norwich birdcatcher netted upwards

of twelve hundred in one week, and that some Brighton birdcatchers took as many as five hundred each in a single morning. The Norwich men report that though Greenfinches have been so numerous, they have at the same time taken hardly any Sparrows.—J. H. GURNEY (Northrepps, Norwich).

ERRATA.—Page 89, line 23, for "I ascended" read "I descended." Page 91, first line, after the words "on the 23rd" insert "April."

## FISHES.

**Destruction of young Fish by Larvæ of Dragonflies.**—In the Hungarian 'Rovartani Lapok,' for December last, L. Biró states that the larvæ of some *Libellula*—species not determined—have made such ravages in the piscicultural establishment of Count Pulffy at Szomolány that in a pond in which 50,000 young fish were placed in the spring of 1884, only fifty-four could be found the following September, but there was a large quantity of the larvæ of the *Libellula* referred to.

## SCIENTIFIC SOCIETIES.

## LINNEAN SOCIETY OF LONDON.

March 5, 1885.—Sir JOHN LUBBOCK, Bart., F.R.S., M.P., President, in the chair.

Messrs. James Epps, James Groves, and William Ransom were elected Fellows of the Society.

Dr. F. Day read a paper "On the rearing, growth, and breeding of Salmon in fresh water in Great Britain." Referring first to the statements and opinions of the older authorities, he dwelt at length on the more recent experiments of Sir James Maitland at Howieton. In December, 1880, Sir James obtained salmon-eggs and milt from fish captured in the Teith, and from which ova hatched in March, 1881. In July, 1883, it was seen that some of the young Salmon, then two years and four months old, were in parr livery, or had assumed the dress of the silvery smolts, the latter in certain lights showing parr-bands. On November 7th, 1884, a smolt 1½ lbs. weight jumped out of the pond, and from this fish about 100 eggs were expressed. As they seemed to be ripe they were milted from a Lochleven trout. On January 23rd, 1885, eighteen of these eggs hatched, and the young were strong and healthy. On November 11th, 1884, about 12,000 Lochleven trout-eggs were milted from one of the foregoing smolts, and they hatched on January 28th, 1885. On December 1st, 1884, 1500 eggs were taken from two of the foregoing smolts, and milted from one of the males. On the 9th about 4000 eggs from these smolts were fertilised from one of the males, and on the 13th 2500 smolt-eggs were milted from

a parr. Dr. Day further stated that pure salmon-eggs have been hatched in the Howieton fishery; that the young have grown to parr, smolts and grilse; that these latter have yielded eggs, and their eggs have been successfully hatched. Although some time must elapse before it can be ascertained how these young Salmon will thrive, how large they will eventually become in fresh-water ponds, and whether a land-locked race may be expected from them, still the following points seem to have been established:—That male parrs or smolts may afford milt capable of fertilising ova; but if taken from fish in their second season, at thirty-two months of age, they are insufficient to produce vigorous fry. That female smolts or grilse may yield eggs at thirty-two months of age, but those a year older are better adapted for the production of vigorous fry; wherefore to develope ova a visit to the sea is not a physiological necessity. That young male Salmon are more matured for breeding purposes than are young females of the same season's growth. That female *Salmonidæ* under twenty-four months of age, although they may yield ova, are of little use for breeding purposes, the young, if produced, being generally weak or malformed. That at Howieton hybrids between Trout and Salmon have so far proved to be sterile. Furthermore, it was stated that the size of eggs of the *Salmonidæ* vary with the age and condition of the parent; but, as a rule, older fish yield larger ova than the younger ones. Even among the eggs of individual fish variations occur in the size of the ova. From larger ova finer and rapidly growing fry are produced; consequently, by a judicious selection of breeding fish, races may be improved, while it is only where segregation is efficiently carried out that such selection is possible.

March 19, 1885.—Sir JOHN LUBBOCK, Bart., F.R.S., M.P., President, in the chair.

Dr. John Grieve, of Bridge of Allan (N. B.), and Mr. Charles T. Drury, of Forest Gate, Essex, were elected Fellows of the Society.

Dr. G. J. Romanes exhibited two human crania from South Africa. One was that of an aboriginal Bushman from Kruis River, Congo district, Gudsboora, obtained through Dr. Stroud.

A communication was read "On new Hydroids," by Prof. Allman. The paper consists of diagnoses with more detailed descriptions of hitherto undescribed species of *Hydroida* contained in a collection belonging to Miss Gatty, who placed it in the author's hands for determination and description. Thirty-eight species, distributed among twelve genera, are described as new. Among these the new Plumularian genus *Podocladium* is very remarkable, not only by the possession of both fixed and movable nematophores, in accordance with which, like *Heteroplone* of the 'Challenger' collection, it holds a position intermediate between the typical Eleuthero-plean and the Stetoplean genera; but by the fact that every hydrocladium

is supported on a cylindrical pointed peduncle. Among other remarkable and significant forms is one of which the author gives the name of *Thuraria heteromorpha*. In this are found combined in the same hydrophyton no less than three morphological types, which if occurring separately would be justly regarded as representing three genera, *Thuraria*, *Dermoscyphus*, and *Sertularia*. Notwithstanding this singular combination of forms, the author does not believe that the characters of the specimen justifies the construction of a new genus; and he regards the generic position of the hydroid as determined by that one of the three forms which most decidedly prevails in it. *Thuraria heteromorpha* thus shows in a very marked way the indefiniteness of the boundaries between different zoological groups, and calls to mind a phenomenon known to occur among plants, as in certain epiphytical orchids, in which the same stem has been observed to carry flowers referable to several generic types.—J. MURIE.

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ZOOLOGICAL SOCIETY OF LONDON.

March 3, 1885. — Prof. W. H. FLOWER, LL.D., F.R.S., President, in the chair.

Dr. E. Hamilton made some remarks on the supposed existence of the Wild Cat, *Felis catus*, in Ireland, as stated at a former meeting, observing that there was no record of the Wild Cat being indigenous to that country. Dr. Hamilton believed that the cat shown at the meeting in question was only the offspring of domestic cats born and bred in the woods of that district.

A letter was read from Mr. J. H. Thomson, giving the locality of *Helix* (*Hemitrochus*) *filicosta*, which had been previously unknown.

Dr. A. Günther exhibited and made remarks on the skin of a singular variety of the Leopard which had been obtained in South Africa. The back in this specimen was black and the tail reddish grey, while the usual characteristic spots of the ordinary Leopard were nearly altogether absent.

Mr. H. H. Johnston gave a general account of the principal animals observed by him during his recent journey to Kilimanjaro and his stay on that mountain.

Mr. Oldfield Thomas read a report on the Mammals obtained and observed by Mr. Johnston during his expedition.

Capt. G. E. Shelley read a report on the birds collected by Mr. H. H. Johnston in the Kilimanjaro district. The collection contained examples of fifty species, six of which were believed to be new to science.

Mr. Charles O. Waterhouse read a paper on the insects collected in Kilimanjaro by Mr. H. H. Johnston, and gave the descriptions of six new species of Coleoptera, of which examples occurred in the collection.

Prof. F. Jeffrey Bell read a description of a Nematoid Worm, *Gordius*

*verrucosus*, obtained by Mr. Johnston on Kilimanjaro, which was found to be parasitic on a species of *Mantis*.

Mr. E. J. Miers communicated the description of a new variety of River Crab of the genus *Thelphusa* (*T. depressa*, Krauss, var. *Johnstoni*), which had been obtained by Mr. H. H. Johnston in the streams of Kilimanjaro.

Mr. Francis Day read the fourth of the series of his papers on races and hybrids among the *Salmonidæ*, continuing the account of the Howietown experiments from November, 1884, to the present time.

Prof. Ray Lankester read some notes on the heart described by Sir Richard Owen, in 1841, as that of *Apteryx*, and came to the conclusion that the heart in question was that of an *Ornithorhynchus*.—P. L. SCLATER, *Secretary*.

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### NOTICES OF NEW BOOKS.

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*The Cruise of the 'Alert': Four Years in Patagonian, Polynesian, and Mascarene Waters.* By R. W. COPPINGER, M.D. Third Edition. 8vo. London: Sonnenschein & Co. 1885.

*Report on the Zoological Collections made in the Indo-Pacific Ocean during the Voyage of H.M.S. 'Alert,' 1881-82.* Printed by order of the Trustees of the British Museum. 1884.

THE surveys made by the 'Adventure' and 'Beagle' in 1826-36, and by the 'Nassau' in 1866-9, were excellent, so far as the requirements of their times were concerned; but the great increase of ocean navigation within the last few years had rendered it necessary that the charts should contain more minute surveys of certain places which were not formerly of importance. Accordingly in 1878 it was decided by the Lords of the Admiralty to equip a vessel for the threefold purpose of continuing the survey of the Straits of Magellan, of investigating the nature and exact position of certain doubtful reefs and islands in the South Pacific Ocean, and of surveying a portion of the northern and western coasts of Australia.

The vessel selected for this special service was the 'Alert,' already so well known in connection with the Arctic Expedition of 1875-6, and the command was given to Capt. Sir George Nares, K.C.B., who was subsequently succeeded by Capt. Maclear. Needless to say, the equipment included apparatus

for deep-sea sounding and dredging operations, and various instruments and appliances not usually supplied to H.M.'s ships.

That the opportunity which this expedition would afford of making valuable Natural-History collections in little-known regions might not be lost, it was decided to appoint as surgeon one who would also undertake the duties of naturalist, and Staff-Surgeon Coppinger was selected for this post. To judge by the results, as set forth in the two volumes the titles of which are given above, it would seem that a better appointment could hardly have been made; for Dr. Coppinger has more than realised the expectations of naturalists in regard to the collections made by him.

The whole of these collections were presented by the Lords Commissioners of the Admiralty to the Trustees of the British Museum, and no less than 3700 specimens referable to 1300 species (irrespective of duplicates) have thus been incorporated in the National Collection.

The specimens procured during the survey of the southern extremity of the American continent were reported upon in the 'Proceedings of the Zoological Society,' 1881; but such was the extent and importance of the material acquired during the rest of the voyage round the coasts of North-Eastern Australia and Torres Straits, and amongst the oceanic islands between the Seychelles and Madagascar, that the Trustees of the British Museum considered it best that a special Report should be published as a separate work. This has accordingly been prepared by the Zoological Staff of the Museum, and is now available to the public. It forms a thick octavo volume of 684 pages, with 54 plates, some of them coloured—an enduring monument to the industry and zoological acumen of the contributors.

Without going into special details, it may be said that, with the exception of the 'Challenger' expedition, none of the recent voyages has contributed so much to our knowledge of the Littoral Invertebrate Fauna of the Indo-Pacific Ocean as that of the 'Alert.'

To give a brief outline of the voyage, it may be said that sailing from Plymouth in September, 1878, the ship touched for a few days at Madeira and St. Vincent respectively, and crossing the South Atlantic *via* the Hotspur and Victoria Banks,—submerged coral reefs where some remunerative dredging was carried

on,—came to anchor in the estuary of the River Plate off Monte Video on November 17th. A course was next shaped for the Falkland Islands, and entering the Straits of Magellan on the 1st January, 1879, the vessel, after stopping for a few days at the Chilian settlement of Sandy Point, proceeded to the surveying ground among the channels on the west coast of Patagonia. Here the greater portion of the succeeding two years was spent, executing surveys of previously uncharted waters, and adding to those which had previously been only partially effected. During the more rigorous winter months some time was spent at Coquimbo, on the coast of Chili, where the ship was refitted and fresh supplies of stores obtained.

Leaving the South American coast in June, 1880, the next place visited was Tahiti, where twelve days were spent ere journeying on towards the great Fiji group. Here the 'Alert' anchored off Levuka for three weeks, and after visiting the Friendly Islands for ten days, returned to Levuka, whence, after another ten days in harbour, she steamed to Sidney, which port was reached on the 23rd January, 1881.

After refitting, the vessel steamed up the east coast of Australia, visiting all the more important islands *en route*. At all the anchorages marine specimens were collected, as well as in the more open parts of the Prince of Wales Channel, where the depth rarely exceeds thirty fathoms. A good many interesting specimens were also obtained through the assistance of the pearl-shell divers, who have an extensive and lucrative industry in these waters.

From Port Darwin to Singapore in November, 1881, whence, in the following month of February, the vessel left for the Seychelles and Amirante Islands, touching at Coquimbo on the way. With a survey of the Glorioso Islands, 120 miles north of Madagascar, the scientific work of the 'Alert' was brought to a close, and the vessel returned home *via* the Cape and St. Helena, arriving in Plymouth Sound on the 3rd September, 1882, after an absence of nearly four years.

Such is a brief outline of the voyage, the scientific results of which are embodied in the two volumes before us. It need scarcely be said that the general reader will find Dr. Coppinger's narrative pleasanter reading than the more voluminous Report issued by the Trustees of the British Museum; but the naturalist

who would be well and accurately informed will of course consult both volumes.

Did space permit we should like to give a few extracts from the narrative of the voyage, which in many respects is highly interesting.

The distance at sea to which land birds and insects sometimes wander is very curious, and was often noticed by Dr. Coppinger. On the 25th September, when 155 miles west of Cape Finisterre, and during a fresh easterly breeze, a Sparrowhawk settled on the rigging and was captured. On the 4th October a Swallow appeared and flew for some time round the ship. The nearest land at that time was the island of Porto Santo, 254 miles distant. On the 22nd November, when a hundred miles from the Brazilian coast, and in almost the latitude of Rio, great numbers of moths appeared hovering about the ship and settling on the rigging. Sphinx moths were particularly conspicuous, and later in the day several butterflies appeared. No less than seventeen species were captured, of which fourteen were moths and the rest butterflies.

The haunts of the Magellan Sea Otter, *Lutra felina*, are described, p. 58. It is stated to be abundant about the brackish lagoons in the islands, where its "runs" were found to be strewn with the shells of a large spiny crab, *Lithodes antarctica*, its principal food. Dr. Coppinger has seen a Magellan Otter rise to the surface with one of these hideous crabs in its mouth—an unpalatable morsel, one would suppose, being armed all over with strong spines.

That remarkable bird, the Steamer-duck or "Loggerhead" (*Tachyeres cinereus*, Gmelin, *Anas brachypterus*, Latham), is of course noticed as being one of the commonest wildfowl in the Straits of Magellan. The chief peculiarity of this bird is the shortness and unusually small size of the wings, which, not having sufficient power to raise the body, serve only to propel it along rather than through the water, and are used like the paddles of a steam-vessel. Aided by these and its strong broad webbed feet, it moves with astonishing velocity. Its speed has been estimated at from twelve to fifteen miles an hour. The peculiar form of the wing and the short rigid feathers which cover it, together with the power this bird possesses of remaining a considerable time under water, constitute a striking link

between the genera *Anas* and *Aptenodytes*. When adult it measures about three feet from tip of bill to end of tail, and is said to weigh from thirteen to fourteen pounds. Think of that, ye English sportsmen who are wont to pride yourselves on bringing down a fine Mallard of three pounds!

Dr. Coppinger is inclined to think that there are two species of Steamer-duck in the fresh-water lakes of Central Patagonia, one of which possesses the power of flight. This also was the opinion of Capt. King (Voyage of the 'Adventure' and 'Beagle'), but the late Robert Cunningham, in his excellent 'Notes on the Natural History of the Strait of Magellan' (1871), expressed his belief that "the variations in size, capability of flight, and colouring of plumage are chiefly dependent on the age of the birds."

Land-shells in this part of the world seemed scarce. Dr. Coppinger says:—

"I met with representatives of only four species, of which one, a specimen of *Helix*, I found on the frond of a *Hymenophyllum* at Tom Bay. Two others of the same genus were taken from the rotten trunk of a tree in the same locality. At Port Henry, in the Trinidad channel, and other parts in the neighbourhood, I collected several specimens of a species of *Succinea* which clings to dead leaves and decayed pieces of driftwood lying on the shore just above high-water mark. These four species of shells have since been described by Mr. Edgar Smith, of the British Museum, as new to Science. In a fresh-water lake, where I made some casts of a light dredge, I obtained, from the bottom of stinking mud, several examples of a large *Unio* shell and some small shells of the genus *Chilinia*. I afterwards found species of *Unio* in a stream issuing from the lake. North of the English Narrows, many pond-snails of the genus *Chilinia* were also found abundantly in the stream-beds."

Of course the most important portion of the collections made during the voyage of the 'Alert' was that comprising the marine Invertebrata, amongst which many new forms were discovered and fresh specimens of little-known species obtained.

The circumstances under which these were collected will be found fully detailed in Dr. Coppinger's narrative, while the scientific descriptions, with remarks on their affinities, structure, and so forth, have been given with great care in the British Museum Report.

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*Elementary Text-Book of Zoology.* Vol. II. Special Part: Mollusca to Man. By Dr. C. CLAUS; Translated and Edited by A. SEDGWICK, M.A. Sonnenschein & Co. 1885.

IN noticing the appearance of the second volume of Mr. Sedgwick's edition of Prof. Claus' Text-book we cannot, we regret to say, speak in the terms of unqualified admiration which we were able to use of the first volume (*cf.* Zool. 1884, p. 494).

To put the matter summarily, we would say that it would have been just as well if the part relating to the Vertebrata had never been translated at all. This will seem to be a severe judgment, but we think we can justify it, even if we cannot place it beyond the range of criticism.

Firstly, Prof. Claus adopts systems of classification which everybody knows to be based on false views of facts, and when we say everybody we include the author himself; for example, he makes the *Leptocardii*, of which *Amphioxus* is the type, the *Cyclostomi*, of which the Lamprey is the type, orders of the group Pisces, equivalent in value to the *Selachii* or *Teleostei*. The author justifies this course on the ground that it is more convenient "to preserve the unity of the class Pisces"; but a class in which you have forms with brains and without, with and without lower jaws, is about as compact a class as Mr. Gladstone used to think the Turkish Empire was in 1876. The truth of the matter is that the class Pisces is most definite and distinct the moment you take away the cephalo-chordate *Amphioxus* and the round-mouthed Lamprey, or, in the words of Lord Beaconsfield, "consolidate" it. So, again, the division of the Mammalia into *Aplacentalia* and *Placentalia* requires to-day only to be mentioned to be condemned. Prof. Claus might answer, if one said that it was a little late in the day to reproduce with but one modification the old Cuvierian classification of Birds, that ornithologists are unable to come to any agreement among themselves; this would not be a very dignified kind of answer, and at any rate it would only be a part of the truth, for all ornithologists are, for example, satisfied that Swallows and Swifts are not to be placed next to one another even in a linear classification. And, lastly, there are not only more modern, but more satisfactory classifications of the human race, than that of Blumenbach.

In the second place, such advances in vertebrate taxonomy as are due to the investigations of English naturalists are quite neglected; among the Fishes, no notice is taken of Prof. Huxley's researches on the mode of articulation of the lower jaw, or of Prof. Bridge's classification of the *Ganoidei*. Among Birds, we look in vain for any notice of Huxley's researches on the value of the palatal bones as our aid to classification, or of Garrod's studies on the muscles. Among Mammals, the remarkable results of Balfour on the mode of formation of the placenta, and the studies of Turner, which have given a death-blow to the "placental classification" of Mammals, are quite neglected; notwithstanding the labours of Prof. Flower, *Tragul* still figures in the family *Moschidæ*, and no notice is taken of his classification of the Carnivora. There is no need to continue a line of criticism along which there is much more to be said.

Finally, there are too many of what in an examination-paper we should have to call blunders; fossil Monotremes have been known since 1868, and the editor might have added a reference to Sir Richard Owen's lately published paper in the 'Philosophical Transactions.' What we should some months ago have called a blunder, namely, the statement that many Marsupials live in islands of the Pacific Ocean, we can now explain; the Germans have not only seized on New Guinea, but, in deference to the feelings of the Australians, they have moved it several hundred miles eastward. Man is not the only animal that has a chin; the Hoolock Gibbon, as Mr. Mivart has pointed out, has one also. Rathke, Hoffmann, and Gegenbaur have shown that the so-called abdominal sternum of Crocodiles does not consist of ribs.

It will be seen, then, that there is some reason for the judgment we have given; whether the value of the greater part of the book does not outweigh the incompleteness of the account of the Vertebrata is a point on which our readers are now sufficiently informed to be able to pass judgment for themselves. For ourselves, we must say that it is, on the whole, a better text-book of Zoology than we have yet in English; we will not say that "it is the best manual of Zoology yet published, not merely in England, but in Europe," for this has already been said of Prof. Nicholson's manual, and is not, therefore, a compliment that Prof. Claus would care to have paid him.

